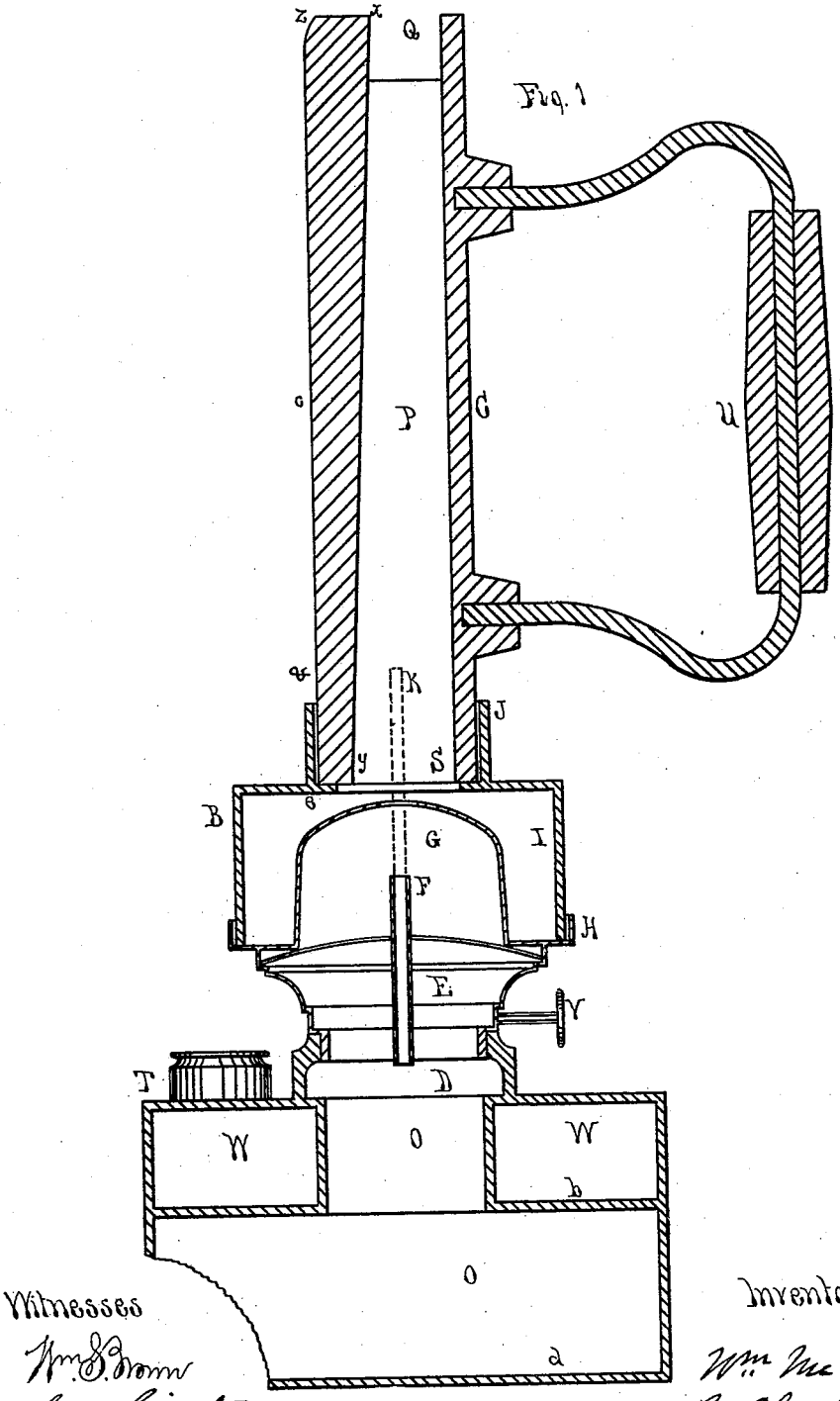
3 Sheets—Sheet 1.

W. McCARTY.

Flat-Iron, &c.

No. 211,517. Patented Jan. 21, 1879.

Fig. 1



Witnesses
Wm. S. Brown
Lew. Carter

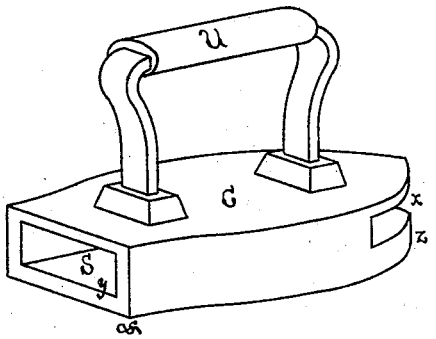
Inventor
Wm. McCarty,
By Charles E. Pratt,
Atty

3 Sheets—Sheet 2.

W. McCARTY.
Flat-Iron, &c.

No. 211,517. **Patented Jan. 21, 1879.**

Fig. 4



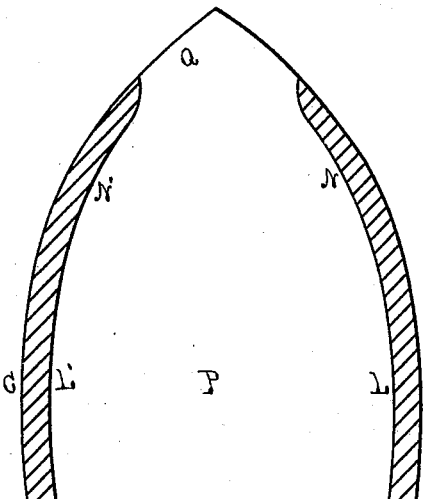
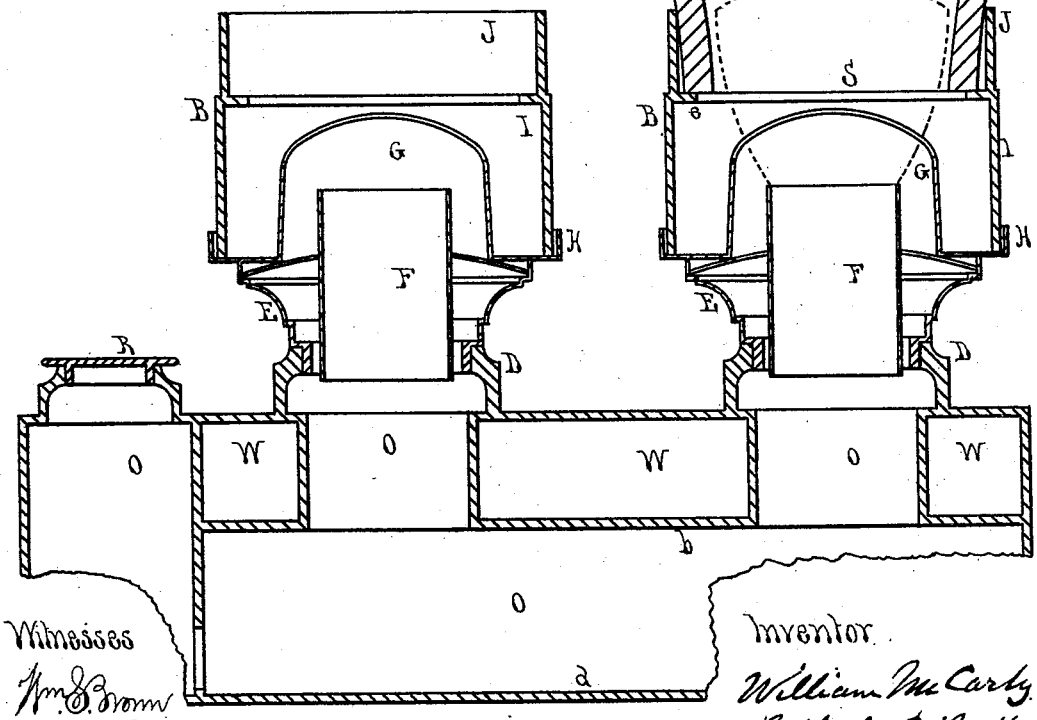


Fig. 2.



Witnesses
Wm. S. Brown
C. W. Easton

Inventor
William McCarty
By Charles E. Watt,
Atty

3 Sheets—Sheet 3.

W. McCARTY.

Flat-Iron, &c.

No. 211,517. Patented Jan. 21, 1879.

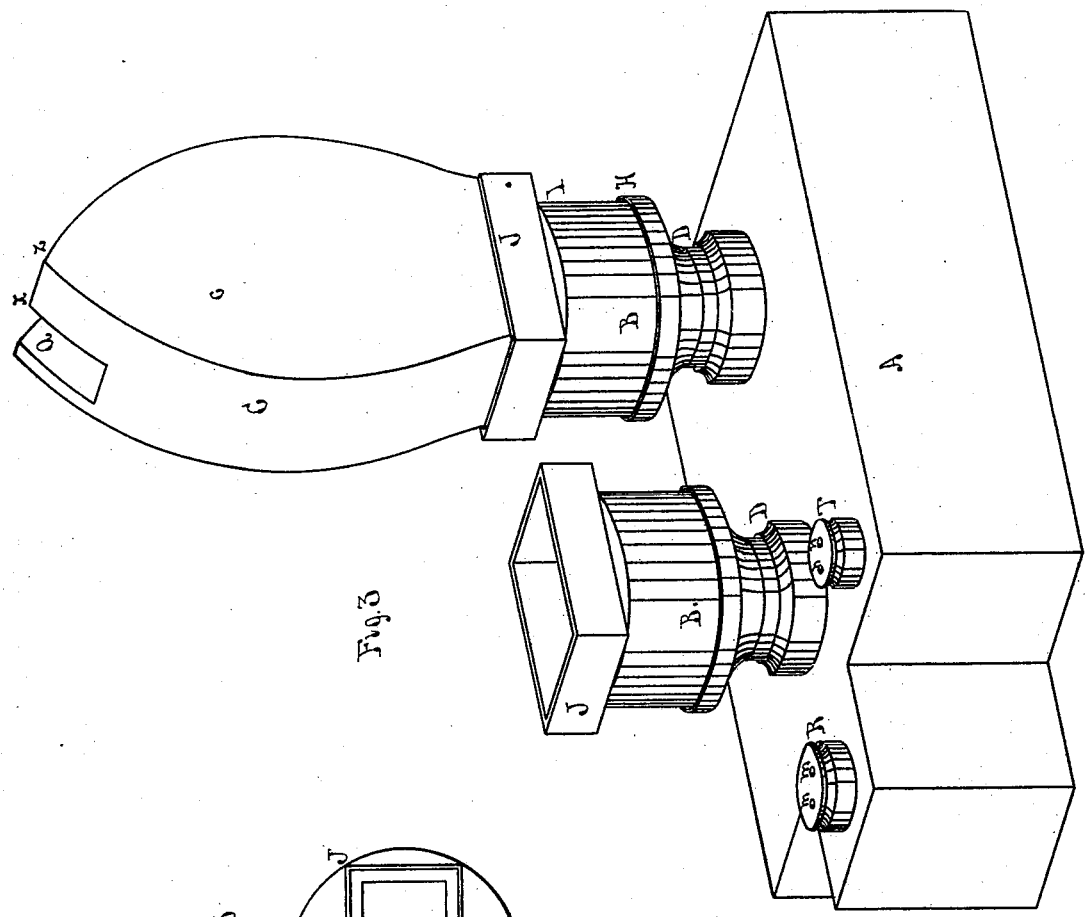


Fig. 3

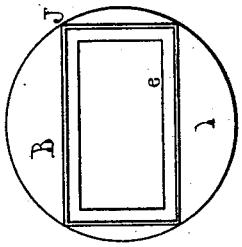


Fig. 5

Witnesses

Wm. S. Brown
C. W. Carter

Inventor

Wm. McCarty,
By Charles E. Pratt,
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM McCARTY, OF BOSTON, ASSIGNOR OF FOUR-FIFTHS HIS RIGHT TO FRANCIS AMORY, OF BEVERLY, AND SAMUEL SNOW, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN FLAT-IRONS, &c.

Specification forming part of Letters Patent No. **211,517**, dated January 21, 1879; application filed November 14, 1878.

To all whom it may concern:

Be it known that I, WILLIAM McCARTY, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Flat-Irons and Apparatus for Heating them, of which the following is a specification:

My improvements relate to flat-irons for smoothing and polishing starched linen and other fabrics, especially to those designed to be heated by flame directly, to lamp apparatus for heating, and to base appliances or holders for sustaining and holding in position flat-irons so made, or other similar articles to be heated directly by flame.

They have for their objects the proper internal construction of a flat-iron to adapt it to be heated by a flame quickly and readily, and so as to hold heat long, without the uncleanness and offensiveness caused by incomplete combustion of the flame therein; the proper external construction to adapt it to being thus heated and to its appropriate uses; the production of a lamp for heating with speed, durability, and safety; the making of a base or holder adapted to support and hold firmly such a flat-iron in its proper position for heating by a flame, and combine with the burner of a lamp and the article to be held and heated, so as to make a perfect draft and chimney, and also readily removable from the lamp to give place for a transparent chimney; and, generally, to obviate and overcome the difficulties and objections existing in all the contrivances heretofore described for heating flat-irons by means of lamps and gas-jets.

In the drawings, Figure 1 shows a sectional view of my whole contrivance on a vertical plane passing through the shortest diameters of the lamp, the flame, the base-holder, and the flat-iron. Fig. 2 shows a sectional view of the same on a plane passing through the longest diameters and at right angles with the other plane of section. Fig. 3 is a view, in perspective, of my lamp, base-holder, and flat-iron in position. Fig. 4 is a perspective view of my flat-iron, showing the base end and aperture S; and Fig. 5 is a top-plan view of my base-holder detached.

A is a lamp-body, which I make of any suitable material, and usually large enough to support two burners, E E, so that either both burners may be used for heating, or one for heating and the other for light, with a transparent chimney in place of the opaque chimney supplied by the flat-iron and holder; or the chimney may be fitted to the holder just as the flat-iron is, and there is then no need to remove the holder when putting on the glass chimney. This lamp-body A has two bottoms, *b d*, *d* being inside, and is divided into two or more chambers or apartments, O and W, and is provided with a screw-cap, R, opening into the oil-chamber O, and another screw-cap, T, opening into the water-chamber W, and also with one or more sockets, D, for a burner or burners, also opening into the oil-chamber O. The water-chamber W is above the oil-chamber O, and covers it substantially, and is around the openings within the sockets D D, within which are the wicks, so as to operate to prevent the parts containing and coming near the oil from rising above a safe point in temperature, and thus completely protects the lamp against explosion, which might otherwise be induced by the great heat developed by heating the articles above.

The cap T has a perforation to allow escape for the evaporation of the water.

E is the burner, having the wick-tube F, the dome G, the bracket H, and the thumb-ratchet V, for raising and lowering the wick. This burner E is screwed into the socket D in the ordinary manner, and may be of any desirable form; but I make it of greater strength than ordinary burners, so as to hold firmly the weight above, and usually with a wider wick-tube; and it is provided, in the usual manner, with perforations for air-passages, &c., so that when surmounted with a glass chimney it will give complete combustion. The dotted line K represents the flame when the lamp is burning.

B is a base-holder, consisting of a part, I, which fits into the bracket H, and may be

held there in place by catches and a small screw, or in any similar way, as a glass chimney is, and of a part, J, which is fitted to receive the base end of a flat-iron or other hollow article to be heated; and these two parts are connected and constructed in such a way that they are firm and strong to sustain the weight above in place, that they are open to the passage of air to and around the flame and through them into the chimney above, and have a projection or projecting shoulders within the part J, to support the article above and prevent it from falling too low upon the flame or dome below, and that they are readily removable to give place to a glass chimney.

C is my flat-iron, of which U is a handle, and *c* is the operative or smoothing surface. P is the interior cavity in this flat-iron. S is the opening at the base, and Q is the opening at the top or apex of the same. I shape and construct the base end of the flat-iron so that it will fit and be held by the base-holder B in position, and so that when the iron is in position for heating, the side *c* is perpendicular; also, with the opening S of sufficient size and proper shape to admit the flame and proper air-currents. The free opening Q at the top of the iron I make of suitable shape and size to practically co-operate with the opening S and cavity P, and burner or base-holder below, to form a perfect chimney. The side of this device toward the handle U is as thin as consistent with substantiality, and the wall of the cavity P next to it is nearly straight and perpendicular when in position, as shown in Fig. 1, the opposite or smoothing side *c* being also perpendicular, or nearly so, when in said position. This side of the flat-iron is thick, in order to hold heat and make the whole of suitable weight, and is thicker at the apex than at the base, so that the wall of the cavity P nearest the side *c* is not perpendicular, but approaches the opposite wall as it goes up until the thickness from *x* to *z* is about twice as great as the thickness from & to *y*. Again, as shown in Fig. 2, the sides of the cavity P, which intersect a plane passing through the longer diameter of the flame and the flat-iron, are neither straight, plane, nor perpendicular, but are curved through substantially their whole length—*i. e.*, they curve inward at and near the top and bottom of the cavity when in position as above, and thus, by their intersection with said plane, form a curve, M L N, on one side, and an opposite corresponding curve on the other side, substantially like the two longer sides of a broken ellipse.

I find by actual experiment that combustion is most nearly perfect when the length of the bottom opening, S, is about a quarter of an inch from the flame throughout the whole extent of the flame, and that consequently the curvature is determined and governed in each case by the shape taken by the flame through its whole extent from the delivering-tube upward and laterally.

Having now described one form of a contrivance embodying my improvements, I may point out the manner of its operation briefly, as follows: The oil tank or chamber O is filled by pouring in oil at the cap R. The water-chamber W is filled by pouring in water at the cap T. The base-holder B is placed in position in the bracket H, the wick lighted, and the flat-iron C is held with its apex upward, and the base placed in the part J of the base-holder B, so that the longest diameter of the flame K and the longest transverse diameter of the cavity P are in the same plane. The flat-iron thus placed forms a chimney for the flame, and the curvature of the cavity P at M L N and M′ L′ N′ is such as to cause complete combustion, and prevent the smokiness and accumulation of lamp-black incident to other forms of construction.

The inclination of the side of the cavity from *y* to *x* causes the heat of the flame to impinge upon that side of the cavity next to the smoothing or operative part of the flat-iron *c*, and thus it is quickly and evenly heated, while the thickness of the wall on the side *c* is such as to retain heat a long time.

The two parts I and J of the base-holder are not soldered together, as the heat would melt them apart, but are joined by a folding joint, or may be cast solid together. The water around the burners absorbs the heat from them, and prevents any danger of explosion by generation of gas from the oil in the lamp, and as soon as one flat-iron is heated it is taken off and another put in its place to heat. Where two or more burners are used, the irons are taken off the different burners alternately, and when light is needed, a glass chimney of suitable size and shape is placed on one burner, or on the holder, instead of an iron one.

The devices heretofore described and attempted to be used have, so far as my knowledge and examination extend, failed of accomplishing their purpose of heating flat-irons directly by flame, and were all open to the objections of dirtiness, danger, and impracticability.

My improvements are proved, by experiments and actual continued use, to obviate these objections, and to be in every respect practically successful.

I do not claim, broadly, a hollow flat-iron, or the heating of a flat-iron inside, or the combination of a flat-iron with a lamp for heating it, or the combination of a holder with either for that purpose, or the construction of a hollow flat-iron with the opposite sides of its cavity curved inward toward the top or apex; but

I claim as new and of my invention—

1. The movable base-holder B, provided with the parts I and J and the ledge *e*, substantially as described.

2. An apparatus for heating, consisting of the chambers O and W, the openings *m n*,

the socket D, burner E, tube F, dome G, bracket H, and holder B, having the parts I, J, and *e*, combined and operating substantially as described.

3. The flat-iron C, constructed with cavity P, openings S and Q, curved walls M L N and M′ L′ N′, and the incline or thick overhang *y x z* &, and adapted, as shown at the base, to be combined with the holder B, bracket H, and tube F of a burner, in the manner and for the purposes herein shown and set forth.

WILLIAM McCARTY.

Witnesses:
C. W. CARTER,
CHARLES E. PRATT.